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ABSTRACT

The purpose of this practicum was to increase teachers' awareness of various learning styles and multiple intelligences in middle school classrooms by analyzing their own styles and applying that knowledge to their teaching styles and strategies. Six workshops designed to introduce, assess, and offer tangible classroom strategies in learning/teaching styles and multiple intelligences were held during the implementation phase of this practicum. Subsequently, the information utilized by staff from the workshops was tallied through observation data, lesson plans, pre- and posttest surveys, and an interdisciplinary unit checklist. Outcomes of the practicum were positive--all four objectives were reached successfully. The heightened awareness and utilization of diversity in styles of teaching, ways of learning, strategies used in the classroom, and kinds of intelligences have yielded potential long-term effects for the benefit of students and educators. Six appendixes include: (1) Daily Lesson Plans; (2) Learning/Teaching Styles Checklist; (3) Teacher Talk Time/Strategies Tally Sheet; (4) Evaluation Checklist; (5) Post Observation: Elements of Learning/Teaching Styles; and (6) Post Workshops/Classroom Experience Poll. (45 references) (Author/LL)

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Developing and Implementing an Inservice Workshop Series for Middle School Educators in Learning/Teaching Styles and Multiple Intelligences

by

Penny K. Wallin

Cluster #34

A Practicum Report presented to the Ed. D. Program in Child and Youth Studies in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

NOVA UNIVERSITY
1990

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ABSTRACT

Developing and Implementing An Inservice Workshop Series for Middle School Educators in Learning/ Teaching Styles and Multiple Intelligences. Miami, Florida., 1990: Practicum I Report, Nova University, Ed.D Program in Child and Youth Studies. Descriptors: Learning Styles/Teaching Styles/Multiple Intelligences/ Classroom Strategies/Staff Development.

This practicum aimed to increase teachers' awareness and use of learning styles and multiple intelligences in middle school classrooms by analyzing their own styles and applying that knowledge to their teaching styles and strategies.

Six workshops designed to introduce, assess, and offer tangible classroom strategies in learning/teaching styles and multiple intelligences were held during the implementation phase of this practicum. Subsequently, the information utilized by staff from the workshops was tallied through observation data, lessons plans, pre and post surveys, and an interdisciplinary unit checklist.

Outcomes of this practicum were positive. All four objectives were reached successfully. The heightened awareness and utilization of diversity in styles of teaching, ways of learning, strategies used in the classroom, and kinds of intelligences have yielded potential long-term effects for the benefit of students and educators.

Chapter I

INTRODUCTION

Description of Work Setting and Community

The educational setting was a middle school. The structure, built as an elementary school in the 1930's, became the area's black high school and later a junior high school during the 1970's. The grade configuration shifted from 7-9 to 6-9 in 1985, and from 6-9 to 6-8 in 1987. The building sprawled the length of a block and was equipped with full gymnasium, auditorium, library/media center, cafeteria and 50 classrooms.

The facility housed 900 children, consisting of 54 percent Blacks, 34 percent Hispanic, 11 percent Whites, and one percent other (primarily Asian). Twenty-five percent of the student population was part of the on-site Magnet Program. This program was mandated by the county to achieve racial balance, and to increase numbers at the setting, through busing students to a school of choice. Other socioeconomic factors included 20 percent of the students residing in "projects" (low income housing),

70 percent participating in free or reduced price meals (breakfast and lunch), 50 percent living in single parent situations, and one percent attempting suicide during the last year. The school had an inner city ambiance.

The staff of 45 consisted of 37 percent Blacks, 13 percent Hispanics, 49 percent Whites, and one percent Asian Indians. Twenty-six percent of the staff members had master degrees; seven percent, specialist degrees; and one percent, doctorate degrees. The teaching experience average was seven years.

Writer's Work Setting and Role

The writer worked with 200 children, and a staff of four, in a Magnet Program designed to alleviate a racial imbalance in the school. The Magnet Program also offered a Humanities orientation in the academic disciplines of language arts, social studies, creative writing, speech and debate, and journalism. The role of the writer included that of Humanities Magnet Lead Teacher, program facilitator, inservice training leader, and peer teacher with the county Beginning Teacher Program.

Chapter II

STUDY OF THE PROBLEM

Problem Description

The staff appeared to have had little exposure to, and understanding of, the research on learning styles and multiple intelligences. The paucity of their background knowledge had resulted in a rigidity in recognizing, understanding, and accommodating diverse learning and teaching styles in the classroom, leading to a diminished effectiveness. Classroom teachers, bound by the rote-and-repetition method of teaching, utilized linguistic, logical and intrapersonal intelligences through a lecture/ text format. Once material was presented in the styles of the teachers, students were responsible for that information. The problem was that teachers lacked the expertise to teach to the various ways students learn.

Problem Documentation

The existence of the problem at the site was supported by the following data:

In September of 1989, a staff meeting consisting of 45 teachers and counselors was held by the site administration (with encouragement from the county) to determine priority goals and needs at the site. The top three priority goals for the school were identified as 1) reduction of at-risk students, 2) parent/ community involvement, and 3) professionalization of teachers. In this last area, one need called for assistance in middle school strategies such as mastery learning, cooperative learning, and learning/teaching styles.

With the explicit need for learning and teaching styles expressed, the administration provided articles to the staff during the fall semester 1989.

Table 1 shows the results of a poll taken in November 1989 of 45 staff members, which revealed the following information concerning learning/teaching styles and multiple intelligences. Seven out of the 45 stated that they were exposed to courses on learning styles and multiple intelligences. A total of 16 were familiar with the instruments, terms, and strategies on styles, and ten felt that the literature provided in the fall of 1989 gave sufficient explanation of styles.

Fifteen out of the 45 staff members expressed an interest in workshops on learning/teaching styles and multiple intelligences.

TABLE 1

Elements of Learning/Teaching (L/T) Styles and Multiple Intelligences

Subjects - 45 staff participants

	YES	NO
College courses taken in L/T Styles and Multiple Intelligences	7	38
Adequate familiarity with instruments, terminology, procedures	16	29
Sufficient explanation of L/T Styles from literature perusal	10	35
Interest expressed for workshop	15	30

The survey also indicated that 25 used lecture as the primary method for instruction; 29 used whole group instruction. Twenty-seven staff members used textbook tests for assessment, while 29 used only linguistic and mathematical intelligences as the main focus.

TABLE 2

Methods Used in Class

Subjects - 45 staff participants

	Number
Instruction by lecture (Auditory)	25
Whole group instruction	29
Textbook tests used for assessment	27
Linguistic and mathematical intelligences central focus	29

Because of the expressed interest in inservice workshops, six - 45 minute class observations were conducted to assess certain factors as determined by the administration and the writer. These included strategies utilized during class, objectives listed in lesson plans, off-task time for correction of students, patterns of student learning, and room design/ accommodations. Table 3 indicates the findings from the six classes observed.

TABLE 3

Observations of Six Classes

STRATEGIES:			
Lecture	Art	Role Playing	Use of Written Materials
4[a]	1[b]	1	2
OBJECTIVES EMPHASIZED:			
Knowledge Skills	Socialization Skills	Critical Thinking	Creative Expression
6	1	1	2
OFF TASK PROCEDURES:			
Behavior Problems	Length of Time Spent Each Period		
5	5 minutes		
PATTERNS:			
Whole Group	Individual	Small Group	
4	1	1	
ROOM DESIGN/ACCOMMODATIONS:			
Desk Arrangement:	In Rows	In Stations of Six Tables	
	5	1	
Nutritional Intake (Snacks)			
None			

[a] 84% of Period
[b] Drawing

Causative Analysis

The most prominent causes of the existing problem appeared to be the lack of adequate teacher training in learning style analysis, accommodations, strategies, and observation skills. Teachers themselves expressed their inability to gain sufficient information on learning styles and multiple intelligences from their own perusal of the literature.

Further, teachers locked into textbook and curriculum timeframes lacked resources and time to accommodate various styles. In view of the emphasis on understanding and utilizing the various learning/ teaching styles, as well as multiple intelligences, educators felt frustrated and delinquent when they were unable to adapt to these innovations. They were overwhelmed by departmentalized piecemeal tasks and curriculum, leaving little opportunity for whole-learning dialogue.

Relationship of the Problem to the Literature

A review of the literature indicates that the existing problem is not endemic to the site of the study. Anrig and Lapointe (1989) found that intention and experience in education are not generally synchronized. The role of students is largely passive, rote learning, while teacher lecture is the most common instructional method, placing little emphasis on higher-order thinking skills.

As regards to theory development, Cronbach (1975) acknowledges the failure of psychology to come up with a theory of instruction--a single best method of teaching everyone. Education uses theories from

psychology, sociology, philosophy, and other disciplines, believing that behavioral and social scientific research produce generalizations that teachers can apply to problems (Egan, 1983). Few researchers on teaching believe that "laws of learning" are adequate. Consequently, attention is focused on the problem of teacher effectiveness (Tom, 1984). Annarino (1980) views the teacher as the catalyst between the learning (with a set of behaviors, abilities, interests, needs), and the instructional environment (with its definitive goals, objectives, meanings, and values).

In the area of cognitive development, research indicates that cognitive processes of the brain appear to affect cognitive style, a key component of learning style. Management of learning fails when the teacher does not understand the student or adapt management techniques to student needs (Cantwell, 1982). Learning problems frequently are not related to the difficulty of the subject matter, but rather to the type and level of the cognitive processes required to learn the material. Research shows that students who are not learning do not know the processes and operations of learning (Letteri, 1982). Recent investigation, both

in neuroscience and cognitive science, indicates that attentional and encoding systems of the brain, as well as environmental stimuli are directly involved in learning. Educators, however, have not used this knowledge effectively (Wittrock, 1981). Confusion exists in distinguishing between the phenomena of development with its long time frame and learning, which manifests itself in events taking place at a certain time (Ausubel, 1980).

Study of the human brain points to the importance of cerebral lateralization for both the development of cognition and the understanding of differences in learning style, especially those attributable to sex, social class, and cultural background. It has also been found that youngsters who reach puberty earlier than normal have brains less lateralized. Chall & Mirsky (1978) believed that girls who, on the average, reach puberty approximately two years earlier than males, have less lateralized brains .

A characteristic of adolescent thinking is individuality of pace (Keating, 1980). As of 1983, Pasch & Gallagher observed that little success had been achieved in integrating cognition and self-concept enhancement into a single product.

It is suggested by de Bono (1985) that no matter how advanced one becomes in the development of cognitive skills, a person should always seek to become better. The main difficulty of thinking is confusion, to which de Bono accordingly presents the notion of "six thinking hats" to reduce this problem. By assigning a color to each of the hats, and allowing a person to choose deliberately one of the colors, he encourages thinking in one mode at a time. The colors of the hats are symbolic:

White - (neutral and objective) is concerned with objective facts and figures

Red - (anger and emotion) gives the affective, emotional view

Black - (gloomy and negative) deals with why something can't be done

Yellow - (sunny and positive) indicates hope and positive thinking

Green - (abundant and fertile) refers to creativity and new ideas; it encourages lateral thinking whereby one is able to use attitude, movement, and provocation for cutting across patterns in a self-organizing approach to generate new perceptions

Blue - (cool and lofty) is concerned with the control and organization of the thinking process

This concept is especially useful as the adolescent faces a plethora of information exploding in all facets of society. The more information one has, the more a person needs thinking competency to sort it out.

A third category of research pertinent to this study concerns learning styles. Learning styles vary widely across the period of early adolescence. Defined by Hunt (1981), learning style is the amount of structure an individual needs to learn best. It is not synonymous with ability, but can change developmentally along a concrete-abstract continuum. Keefe (1988) proposes that learning style has three dimensions

(a) cognitive style for perceptual modality,

(b) affective style which is described by self-actualization, and

(c) physiological style as seen in male/female differences or health-related behaviors.

According to Dunn (1987), learning style is the way people concentrate on, internalize, and remember new and difficult knowledge or skills. It is a biologically and developmentally imposed set of characteristics that make the same teaching method wonderful for some but terrible for others. Dunn

describes the way a classroom would be organized in response to individual needs for quiet or noise, bright or soft illumination, temperature differences, seating arrangements, mobility, snacking needs, or grouping preferences. Dunn also suggests the patterns and senses through which people learn: hearing, speaking, seeing, manipulating, writing, experiencing, or a combination of these variables. He states that as long as schools graduated the students whose styles responded to the system, while casting out, permitting to drop out, or relegating to non-academic training those whose styles found the system unresponsive, citizens believed in it. However, once the schools were asked to educate all youngsters and keep them in school beyond 16 years of age, educators found that the system could not do that. It was then that researchers began to wonder why, and it was then that research began to understand individual learning styles.

Classrooms which utilize a learning styles instructional approach are characterized by the student being the pivotal focus (Dunn & Griggs, 1988). All learning is compatible with the student's learning style preferences and with the employment of a wide variety of strategies. The individual student is

involved extensively in the learning process, taking major responsibility in seeking environmental, physical, sociological, and psychological stimuli conducive to that student's specific requirements. Instead of a single way of learning, researchers have identified at least 32 different learning styles. Many of these styles can block out, or open, the way for students to respond to teaching and learning, depending on whether instruction fits their individual styles. Hanson (1989) emphasizes that, in addition to teachers' knowing the learning styles of their students along with appropriate instructional strategies, they must also have knowledge of their own teaching styles. Beyond the mastery of skills, and the development of abstract and analytical capacities, education must be for the optimum development of all potentialities of the students. If teachers are to see the gifts of their students, they must be alert, accepting and appreciative of their own styles.

Sternberg (1988), as cited by Hanson (1989), believes that styles of thinking and learning are as important as levels of ability. Styles, the ways in which a person prefers to use intelligence, are propensities rather than abilities; students' thinking

styles are frequently ignored. Sternberg's theory of thinking styles is known as "mental self-government" which is based on the idea that people need to govern their everyday activities with a flexibility of the use of the mind, accounting for differences in thinking and learning styles. The degree of similarity between teachers' and students' styles greatly affects both teachers' perceptions of their students, and students' perceptions of teachers. Both students and teachers tend to exploit their preferred styles, which may or may not match. Teachers tend to confuse style with quality of mind, and may reward students with styles similar to their own to a large degree.

Eiszler (1983) noted that both teachers and students demonstrate propensity for preferred form. Teachers need to be flexible in their teaching to reach the greatest number of students and should use students' preferred style as a point of entry, not to try to match each student's style. Students should develop their stylistic strengths and also their ability to move from one style to another when it is prudent to adapt or compromise. It should be remembered that all styles are exercised in a larger social context. Styles are not fixed but fluid, and

with age and experience of individuals may be changed. Eiszler sounds a caveat that teachers and researchers, who consider modality preference in general terms, may contribute more to misunderstanding of individual learner differences, hindering further development of information on individual differences.

Statistics on educational endeavors continue to give rise to alarming criticism. Failure is a constant companion in our schools. Curriculum revision has not made a dramatic difference, no more than increasing teacher salaries, lengthening the school day, assigning more homework, or mainstreaming. Psychological descriptions of individual differences seem to have used static terms which offer little insight into how a teacher may work with the student. The description of student differences in terms of qualities which are directly translatable into teacher action is the basic source of appeal of learning styles approach (Hunt, 1981).

In the face of mounting criticism of instructional practices, and with the wealth of knowledge increasing at an unprecedented rate, now is the time to examine how students learn and to adjust and accommodate the educational system to meet individual instructional

needs. Both the National Association of Secondary School Principals, and the Association for Supervision and Curriculum Development, have established networks of university and school practitioners to focus attention on the higher test scores, improved attitudes, and reduced number of discipline problems that result from teaching students through their individual learning style strength (NASSP Curriculum Report, 1989). As advocated by Dunn & Griggs (1988), the most efficient vehicle for teaching and learning is the individual student, with both the teaching and learning being compatible with style preference. The stages in the change process in learning as supported by research (Goodlad, 1984; Bok, 1986), include awareness, knowledge, personalization, implementation, consequences, collaboration, re-focusing, and evaluating.

Research studies on learning and the effects of instructional environments, perceptual preferences, sociological preferences, and time-of-day preferences found that most learners can master the same content. How they master the content is determined by style (Dunn, Beaudry, Klavas, 1989).

Hanson (1988) urges school leaders and curriculum developers to be aware that no single intelligence or curriculum focus will lead to a satisfactory position. Instead, they should realize that schools are places for all types of minds where the intelligences are inseparable. In the last few years educators have been suggesting new and more thorough ways of appreciating the many facets of intelligence, as well as how style represents a new perspective on intelligence. Gardner (1983) reports that Arts PROPEL, a collaborative research project with the Educational Testing Service and the Pittsburgh Public School System, that assesses middle and high school students' growth and achievement in artistic endeavors, is a good example of innovative thought. At-risk children often have trouble with school because they are "global" learners (understand broad concepts and general overviews), as compared to "analytic" (do well with sequentially presented facts and details that lead up to general conclusions) (Hodges, 1989).

Ferrell (1983) refers to a factor analytic comparison of four learning styles instruments: the Grasha-Riechmann Student Learning Style Scales, the Kolb Learning Styles Inventory, the Dunn Learning Style

Inventory, and the Johnson Decision Making Inventory. Additional refinement needs to be made on learning styles instruments to insure greater validity and reliability. An analytic comparison (Keefe, 1988) of these four learning styles instruments indicated that none of the instruments measured all four types of behaviors outlined for the National Association of Secondary School Principals. The types of behavior include cognitive, affective, physiological, and physical. The amount of total variance accounted for cannot be used to compare the instruments directly, because they tap different behaviors within the learning style paradigm. Although the practitioner may only wish to assess one type of behavior, it should be possible to construct an instrument that taps all types of behavior, and more fully assesses the entire learning style paradigm.

Special care must be exercised in noting differences based on cultural factors among learners. Sims (1988) makes a strong case for identifying different learning styles that exist within all cultures. In a study he conducted of black, Mexican, and white American underachieving third and fourth graders, Sims reported the most extreme variables were

revealed between black and white Americans. Underachieving black students preferred music, bright light, warmth, and informal seating. They also preferred afternoons for learning and wanted auditory, visual, and kinesthetic approaches to learning new material. A number of instruments which identify the learning styles of various cultural groups are available and have been collected by Spiridakis (1983).

All schools appeared to face the immediate challenge of making their instructional programs simultaneously more comprehensive, personally compelling, and focused on higher level thinking skills. From the review of the literature, it was found that a commonalty existed--that indeed the problems facing schools might be most appropriately addressed by focusing on learning/ teaching styles and multiple intelligences. It was an exciting and promising attack on failures, apathy, and mediocrity.

Chapter III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

Teachers will become aware of learning/teaching styles and multiple intelligences. In light of their new and enriched understanding, they were to implement teaching appropriate to the various styles.

Behavioral Objectives

After the implementation period, the staff of the Humanities Magnet Program in language arts, creative writing, and social studies, were to:

1. Become knowledgeable about learning/teaching styles.
2. Diversify their teaching styles by offering different methods.
3. Reduce teacher talk time and utilize cooperative and peer strategies.
4. Accommodate existing materials for an interdisciplinary unit in which concepts are taught through the seven intelligences.

Measurement of Objectives

Measurement of the objectives was to take place as follows:

1. Each of the four teachers was to become knowledgeable about learning/teaching styles by analyzing and interpreting their own individual elements from their profiles, as determined on the PEPS Survey and the Myers-Briggs Inventory.
2. At least two different methods of presenting a concept were to be used each class period, over a period of eight weeks, as reflected in the lesson plans format (See Appendix A), and the lesson plan check list (See Appendix B). The methods to be used included visual, auditory, tactual, and kinesthetic.
3. Teacher talk was to be reduced by 50 percent, and cooperative and peer strategies were to be increased by 50 percent, each class period for eight weeks as reflected by the activities section of lesson plans (See Appendix C).
4. Concepts for an interdisciplinary unit were to be taught through five of the seven intelligences as demonstrated through lesson plans (See Appendix D).

The intelligences to be utilized were to include: linguistic, logical, intrapersonal, spatial, musical, bodily- kinesthetic, and interpersonal.

Chapter IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

A number of solution possibilities are offered in the literature to deal with the problem which existed at the site. Jenkins, as cited by Keefe (1988), suggests specific steps to introduce learning styles (i.e., personalization of education) to a school staff. Among the steps are:

- provide an orientation
- share research on the topic of styles and intelligence
- administer one or two instruments
- support staff as they articulate their own styles and make choices of new teaching strategies
- offer staff development sessions to accommodate materials, inform parents, share experiences and techniques with colleagues and students
- administer a learning style instrument to students followed by help in interpreting results and planning strategies.

At Yale University, the Practical Intelligence for Schools project (PIFS) has developed meta-curricular units that can be infused into the curriculum typically taught in middle school classes. These units help

students focus on traditional content areas of math, social studies, and reading (Krechevsky & Gardner, in press).

The NASSP Learning Style Profile (LSP) is an instrument which permits a comprehensive analysis of the learning skills and environmental preferences that affect a student's level of academic performance. The LSP assesses these skills and preferences under four major factors: Cognitive Skills, Perceptual Responses, Study Preferences, and Instructional Preferences (Keefe and Monk, in press).

Staff dialogue to enhance focused connections of subject matter and students is possible through interdisciplinary units (a short term, intensive unit of study based on a particular theme). Kerekes (1987) believes the interdisciplinary unit is a durable, efficient method.

Because the majority of young children think globally, it is important that teachers introduce new and difficult lessons through each student's processing style. Dunn et al. (1989) have developed ways of teaching subject matter through diverse learning styles.

Raebeck (1990) relates a viable solution has been effected to deal with multiple school problems. The students are respected and are exposed to an atmosphere of wholeness, freshness, interdisciplinary exploration, risk-taking, color, variety, sound, art, music, movement, creativity, intensity, and the firm belief in everyone always doing one's best. Raebeck welcomes people to visit the school where a joyful, almost magical, environment exists.

Project Zero at Harvard, headed by Howard Gardner, has been examining the questions of what should be taught and why, through a developing theory of multiple intelligences. This theory proposes that people use at least seven relatively autonomous intellectual capacities, each with its own distinctive mode of thinking. The project is exploring highly individualized ways in which students learn. This solution proposes that to restructure education, the circle of responsible individuals must be enlarged and not only include educational researchers and teachers, but also parents and community leaders (Blythe & Gardner, 1990).

In light of the success of the solutions described, along with the similarity of problems addressed, it was concluded that they offered viable options to the site. The prestigious researchers and the well-known loci of their projects lent credence to their work.

Description and Justification for Solution Selected

The writer's ideas on the solution of the problem were philosophically/experientially based. The writer's undergraduate work was completed 25 years ago, but many of the same concerns are still plaguing education in 1990. At this particular site, the writer thought it was time to accommodate the diversity in ways of learning, kinds of intelligences, strategies, and styles of teaching. The richness of differences needed to be cultivated and encouraged by their utilization.

Deliberate and explicit acknowledgment of the notion that the burden of learning rests on both students and teachers had to be articulated. Learning, finally, is an individual matter but takes place in a socio-cultural matrix. It is facilitated, or abetted, especially by the teacher, but is a highly reciprocal

act between the student and teacher. Until this reciprocity was understood and accepted, failures in the education system would continue to mount.

In an effort to help solve the problem, the writer proposed to develop and implement strategies that enhanced learning/teaching styles and multiple intelligences. It was the writer's belief that this solution represented an effectual course of action.

The writer was prepared to design and implement a series of inservice workshops on learning styles and teaching to the multiple intelligences. Since the staff had selected professionalization of teachers as a priority goal, time had been allocated for professional growth meetings at the site. A special facet requested by the teachers was for strategy ideas.

Report of Action Taken

A number of steps were taken to accomplish the plan. Dialogue took place with the principal and assistant principal for curriculum to discuss content emphasis, time frame, and materials. Workshops were prepared and conducted on the following topics:

1) Background/research on learning styles/multiple intelligence.

Resources: People Types and Tiger Stripes: A Practical Guide to Learning Styles, (Lawrence, 1979.)

Film Strips with cassettes: "Brain Dominance and Learning Styles - Avenues to Understanding;" and "Research and Background and Learning Style Instruments." (Development Grant Project, Madison Local Schools, Mansfield, Ohio.)

Test: Learning Styles: An Alternative for Achievement. (Development Grant Project, Madison Local Schools, Mansfield, Ohio.)

"A Question of Creativity," (Howard Gardner in Harvard Alumni Gazette, February 1990.)

Audio tape: "Recent Research on Learning Styles and Practical Implications for Supervisors and Teachers," (featuring Rita and Kenneth Dunn and Helene Hodges).

This writer learned a valuable lesson in communication while preparing for Workshop 1. The administration had reviewed and supported the agenda. The writer had designated People Types and Tiger Stripes as an introduction, but when time came to actually utilize the book, none were to be found at the library or bookstore. All staff members were asked, but to no avail. Finally, in desperation, the writer

told the principal about the dilemma, at which time he arose from behind his large mahogany desk, walked over to a full bookcase, and presented a crisp copy of the book.

Soon after, at the workshop, this writer engaged the staff in the "Eat an Apple" experiment from the book. The principal commented that although the staff worked well together, he had never seen such jovial problem solving and open communication that early in the morning in all his years at the site! Moreover, he would definitely read the book.

Workshop 1 provided the staff with background information on learning/teaching styles. Staff utilized their own perceptions and experiences as the concept of multiplistic rights was firmly established.

2) Assessment of learning styles through various instruments and theories (an overview/an experience).

Resources included these instruments:

PEPS (to be sent to Price Systems for individual and group analyses); Myers-Briggs Inventory; and Thornburg's Multiple Intelligences Checklist.

The invitation to participate in assessment of styles was extended to the entire staff. Thirty-five out of forty-five teachers chose to complete the instruments.

3) Classification and selection of instructional materials to accommodate styles and teaching strategies.

Resources included:

Film strips with audio tapes: "Classification and Selection of Instructional Materials to Accommodate Student Learning Styles;" "Accommodating the Learning Style of the Gifted Student;" "Accommodating Learning Styles (Focusing on Students with Special Needs);" (Development Grant Project, Madison Local Schools, Mansfield, Ohio.)

Text: "The Interdisciplinary Unit - It's Here to Stay," (Kerekes, Middle School Journal, August, 1987.)

This session brought out the frustration of many teachers as to how to acknowledge and accommodate students' learning styles in the middle school context. With teaming and interdisciplinary approaches stressed

at the site, concerns addressed loss of academic integrity within subject areas, classroom management, and the increasing expectations on the teacher.

4) Teaching Strategies for the Learning Styles and Multiple Intelligences.

Resources included:

Text: "Teaching Strategies: Preparing to Make Music;" "Teaching Learning and Curriculum - Putting It All Together;" and "Cognitive and Affective Processes Associated with the Four Hanson-Silver Learning Styles." (Hanson, 1989.) "Temperament in Children" and "Temperament in Leading-Teaching." (Please Understand Me - Character and Temperament Types, Keirsey & Bates.)

The concept of multiplistic rights was reinforced as staff discussed the material. Overheads, drawing materials, and even singing were used to model a multiple intelligences approach to disseminating strategies information.

5) Using Strategies Based on Learning Styles and Multiple Intelligences in the Interdisciplinary Unit.

Resources included:

Text: "Writing Better Objectives Through the Use of Properly Categorized Verbs;" and "Learning Activities and Materials by Styles." (Hanson, 1989.)

The frustration voiced during Workshop 3 dissipated in Workshops 4 and 5. Strategies to meet the various student styles and multiple intelligences were presented with an opportunity to plan actual lessons for the interdisciplinary unit. Teachers were invited to bring text books/resources that could be used in the interdisciplinary unit and given the opportunity to dialogue, brainstorm, and collaborate. Said one teacher, "It seems so simple now; the subjects are sliding together like pieces of a puzzle."

6) Parent Information on Styles, Homework, and Evaluation Techniques; Staff analyses - individualgroup.

Resources:

Text: "Evaluation Techniques Categorized According to Educational Goals." (Hanson, 1989.)

Film strips with cassettes: "Homework and Learning Styles;" "Tell Me About Learning Styles-for Parents," (Madison Schools Project.)

Review of printed analyses of individual staff members (PEPS); group summary from Price Systems.

After this workshop, in which the staff reviewed and contrasted their individual learning style profiles, the request was made by staff to present an overview of learning styles and multiple intelligences directly to parents. Originally, information was to be sent home in a written form. Time was allotted at the next parent meeting to present relevant material, specifically on learning styles and homework. That meeting led to parent requests that students be formally assessed for learning styles. Those requests enabled this writer, through the administration's support, to order and administer the Learning Style Inventory for Grades 5-12, and at this writing, 225 assessments are in the mail to be processed on all students at the center.

After the six workshops, the utilization period occurred. The staff collaboratively designed and implemented an interdisciplinary unit. Daily lesson plans and the interdisciplinary unit plans were logged.

Based on these results, the Learning/Teaching Styles Checklist (See Appendix B), Teacher Talk Time/Strategies Tally Sheet (See Appendix C), Evaluation Checklist (See Appendix D), and post observations of the same six classrooms (See Appendix E) were tabulated and evaluated. Finally, at the conclusion of the implementation period, the staff completed a follow-up poll (See Appendix F). Participation in the workshops also yielded master plan points toward recertification from the Teacher Education Center in the county.

Chapter V

RESULTS, DISCUSSION, AND RECOMMENDATIONS

The staff displayed limited knowledge and utilization of the research on learning styles and multiple intelligences. Because of the apparent deficit, effectiveness in recognizing and accommodating diverse styles was reduced. Through dialogue and surveys, the staff verified the existence of the problem, and asked for assistance in alleviating the situation.

Because of the expressed interest in in-service workshops, six class observations were conducted to assess strategies utilized during class, objectives emphasized, off-task procedures for correction of students, group patterns for learning, and room design/ accommodations.

The writer's ideas on the solution of the problem were philosophically/experientially based. It was thought that it was time to accommodate the diversity in styles of teaching, ways of learning, strategies used in the classroom, and kinds of intelligences. The richness of differences needed to be cultivated and encouraged. Explicit acknowledgment that learning is a

highly reciprocal act and that the burden of learning rests on both students and teachers had to be articulated.

In an effort to help solve the problem, the writer designed and implemented a series of workshops on learning styles and teaching to the multiple intelligences. These workshops were approved and supported by the administration at the site, and included the following topics:

1) Background and Research on Learning Styles/Multiple Intelligences.
2) Assessment of Learning Styles Through Instruments and Theories.
3) Classification and Selection of Instructional materials to Accommodate Styles and Strategies.
4) Teaching Strategies.
5) Using Strategies Based on Learning Styles and Multiple Intelligences in an Interdisciplinary Unit.
6) Homework, Evaluation Techniques, and Staff Analyses.

After the six workshops, the staff collaboratively designed and implemented an interdisciplinary unit. Daily lesson plans along with the interdisciplinary

unit plans were logged, tabulated, and evaluated. Post observations and a follow-up poll completed the gathering of the data for analysis of whether or not the objectives were met.

Results

The staff of the Humanities Magnet Program in language arts, creative writing, and social studies were to meet stated objectives:

1. Become knowledgeable about learning/teaching styles. The objective was to be accomplished by analyzing and interpreting their own profiles as determined on the PEPS Survey and the Myers-Briggs Inventory. The PEPS and the Myers-Briggs Inventory results were reviewed in a group-shared inquiry session.

The investigation of productivity styles was completed using the Productivity Environmental Preference Survey (PEPS). How the four staff members preferred to function, learn, concentrate, and perform was scored in the following areas:

. Immediate environment (sound, temperature, light and design)

- Emotionality (motivation, responsibility, persistence, and structure)
- Sociological needs (self-oriented, peer-oriented, authority-oriented, and combined ways)
- Physical needs (perceptual preference(s), time of day, intake, and mobility)

The standard score scale ranged from 20 to 80 with a mean of 50 and a standard deviation of 10. The staff's individual calculated scores of 60 or more showed strong preference for that area as a factor when studying or working, while scores of 40 or less showed a non-preference for that factor. Scores between 40-60 indicated variation in how much that area was important within the mean (Dunn, Dunn & Price, 1987). Each staff member received an individual profile summarizing the important areas for studying or working.

TABLE 4

PEPS SUBSCALE SUMMARY

PEPS AREA	SUBSCALE	RESPONSES	PERCENTAGE
Noise Level	1	1	25
Light	2	1	25
Temperature	3	1	25
Design	4	3	75
Motivation	5	4	100
Persistent	6	0	-
Responsible	7	4	100
Structure	8	2	50
Learning Alone/Peer Oriented	9	4	100
Authority Figures Present	10	0	-
Learn in Several Ways	11	3	75
Auditory	12	0	-
Visual	13	1	25
Tactile	14	0	-
Kinesthetic	15	0	-
Requires Intake	16	3	75
Evening-Morning	17	2	50
Late Morning	18	0	-
Afternoon	19	0	-
Needs Mobility	20	0	-

Number of respondents = 4
Total responses = 29

Additionally, an area summary enabled the staff to compare and contrast styles. Areas of significance to the entire staff included scores over 60 in motivation, responsible, and learning along/peer oriented. Three of the teachers showed high preference for formal design, learning alone/peer oriented. Three of the teachers showed high preference for formal design, learning in several ways (visual, auditory, tactile, and kinesthetic), and requiring intake, while two preferred structure and morning for best working time. One teacher designated noise level, light, temperature and visual modality as being preferred (See Table 4:).

The Myers-Briggs Type Indicator enabled each staff member to analyze the characteristic strengths, weaknesses, and preferences of her/his own type and to compare and contrast with colleagues. Results included two ENFJ, one ENFP, and one ENTJ types among the staff. The two extrovert, intuitive, feeling, judging types are described as imaginative harmonizers, sociable, expressive, orderly, opinioned, conscientious, and curious about new ideas and possibilities. The extrovert intuitive feeling perceptive type is characterized as a warm, enthusiastic planner of

change; imaginative, individualistic, pursuing inspiration with compulsive energy, seeking to understand and inspire others. The extrovert intuitive thinking judging type is the intuitive, innovative organizer, aggressive, analytic, systematic, more turned to new ideas and possibilities than to people's feeling (Laurence, 1979).

2. Diversify their teaching styles by offering different methods. This was to be accomplished by utilization of varied methods. In order to determine whether the objective was being met, a review of lesson plans was made. Daily written lesson plans of the four teachers were submitted, logged, and totaled for a period of eight weeks. Each of the four teachers meets six classes per day for a five-day week, making a total of 960 plans surveyed.

An analysis of the data would indicate whether the teachers had diversified their styles as reported by the frequencies and materials utilized in visual, auditory, tactual, and kinesthetic methods. It was found that visual methods, such as texts and handouts, were used daily in each period 96 percent of the time.

Tapes, records, and oral speaking auditory methods were used 91 percent daily. Tactual methods, including art materials, markers, paints, and computers, were employed 83 percent of the time. Kinesthetic methods, such as role playing and games, were used 70 percent of the time. Materials and frequencies the methods were utilized by the teachers are found in Table 5.

TABLE 5

LEARNING/TEACHING STYLES FOR EIGHT WEEK PERIOD

METHOD	MATERIALS	TOTAL FREQUENCIES RECORDED	PERCENTAGE
Visual	Text, handouts	920	96
Auditory	Tapes, records, oral speaking	875	91
Tactual	Art materials, markers, paints, computers	800	83
Kinesthetic	Role playing, games	700	70

3. Reduce teacher talk time and utilize cooperative and peer strategies. For analysis of teacher talk time and strategies, tabulations were made for a period of eight weeks from lesson plans under the categories of strategies, objectives, and group patterns. The data obtained are summarized in Table 6.

In order to reduce teacher talk time, emphasis was placed on the use of art and music, in addition to role playing. Written materials were utilized 80 percent of the time. The scope of objectives was increased to include creative expressions and skills of critical thinking. The organization of the lesson plans reflected global and analytical aspects of learning. Sociological accommodations included small group techniques for those who work better with peers, while also providing instructional approaches and activities for students who prefer to work alone.

TABLE 6

TEACHER TALK TIME/STRATEGIES

Data Obtained from Daily Lesson Plans Over Eight Week Period

	FREQUENCIES	PERCENTAGE
STRATEGIES		
Lecture	385	40
Art/Music	576	60
Role Playing	768	80
Written Materials	768	80
OBJECTIVES		
Knowledge Skills	768	80
Socialization Skills	384	40
Critical Skills	576	60
Creative Expression	768	80
PATTERNS		
Whole Group	768	80
Individual	576	60
Small Group	768	80

4. Accommodate existing materials for an interdisciplinary unit in which concepts are taught through the seven intelligences. The intelligences utilized included linguistic, logical, intrapersonal, spatial, musical, kinesthetic, and interpersonal.

Collaboratively, the teachers designed and implemented an interdisciplinary unit with

the concepts taught through the seven intelligences. Table 7 indicates how the intelligences were utilized.

TABLE 7

INTERDISCIPLINARY UNIT: INTELLIGENCES UTILIZED

INTELLIGENCES	FREQUENCIES	PERCENTAGE
Linguistic	960	100
Logical	344	31
Intrapersonal	768	71
Spatial	768	71
Musical	360	31
Bodily-Kinesthetic	768	71
Interpersonal	960	100

Discussion

In an effort to determine whether the objectives were met, six classes were selected randomly within the department for post-observations, including classes in language arts, reading, creative writing, social studies, speech, and journalism. Elements observed included strategies, objectives emphasized, off-task procedures, patterns, and room design/accommodations.

It was observed that a balance of strategies, objectives, group patterns, and design/accommodations existed. Table 8 presents a summary of the observations. The observations revealed a flow from strategy to strategy and from pattern to pattern as teachers utilized style information to enhance the student learning process. Strategies employed (lecture, art, role playing, and the use of written materials) increased 50 percent from observations made prior to the inception of the project. An increase of 51 percent of emphasis on the types of objectives selected in knowledge skills, socializations skills, critical thinking, and creative expression was noted. A decrease in behavior problems occurred, with a dramatic cut in time spent each period on the problem from five minutes to 20 seconds. A 40 percent increase in pattern arrangement (whole group, individual, and small group) was noted, with equal patterning of the three kinds of grouping. As to room design, only one classroom retained the in-row configuration, but now other designs predominated. From no accommodation for nutritional intake, an increase to four instances was observed.

TABLE 8

POST OBSERVATIONS

Elements of Learning/Teaching Styles

STRATEGIES:

Lecture	Art	Role Playing	Use of Written Materials
4	3	4	5

OBJECTIVES EMPHASIZED:

Knowledge Skills	Socialization Skills	Critical Thinking	Creative Expression
6	4	5	6

OFF TASK PROCEDURES:

Behavior Problems	Length of Time Spent Each Period
4	5 seconds each

PATTERNS:

Whole Group	Individual	Small Group
5	5	5

ROOM DESIGN/ACCOMMODATIONS:

Desk Arrangement:

In Rows	In Stations of Six Tables	Other Configurations
1	1	- Angled rows-2 deep on sides facing in - At computers - Arm desks grouped in fours

Nutritional Intake (Snacks)

4

The post workshops/classroom experience poll was conducted to indicate how well the objectives were met as perceived by the staff. The poll indicated positive perceptions by the teachers. Three of the four teachers stated they understand very well the concept of learning/teaching styles and multiple intelligences with one reporting some understanding. All four stated that the workshops familiarized them with background, instruments, and procedures of learning/teaching styles /multiple intelligences, and provided essential exposure and practice in using the knowledge.

The four teachers reported that a variety of instructional methods, including auditory, visual, tactual, and kinesthetic, are now being used. In patterns of student learning, it was stated that whole, as well as small group configurations in addition to individuals working alone are utilized. A variety of assessment techniques are employed such as written tests, role playing/group discussions, analytical essays, creative writing, and projects. An unanticipated technique was reported by all four of the teachers in the use of student portfolios. Students are permitted to select samples of work which they wish to have evaluated. Possibly, one of the most

significant improvements as perceived by the staff was the varied intelligences taught, including linguistic, logical, intrapersonal, spatial, musical, bodily-kinesthetic, and interpersonal.

The writer concludes from an analysis of the data obtained that the four objectives formulated for the project were met satisfactorily. The summaries secured from the PEPS and Myers-Briggs Inventory permitted extensive dialogue as similar and different preferences for learning and working were reviewed. The combination of types and awareness of those types on the teaching team made a dynamic, productive group. The PEPS demonstrated the variations in styles even within a small group of professionals in the same field. The opportunity to extend this understanding, acknowledgment, and acceptance to students also is the logical subsequent step. Challenging implications exist for further research on individual interactions of preferences for working and learning.

As supported by Dunn (1987) and Dunn & Griggs (1988), the teachers at the site agree that learning is compatible with learning style preferences and with the employment of a wide variety of strategies. Classrooms can be organized in response to individual needs for

seating arrangements, grouping patterns, and other preferences. Keefe (1988) has proposed that learning style has three dimensions: cognitive, affective, and physiological, which the teachers have addressed in their lesson plans. The staff has accepted the Hanson ideas (1989) that to see the gifts and potentialities of their students, they must first understand and appreciate their own styles.

Conclusions

It is not claimed that the project has been a panacea for meeting all of the problems existing, but with Hunt (1981) it is agreed that the learning styles approach is a fruitful one for leading to teacher action. Although additional refinement needs to be made on learning styles instruments to insure greater validity and reliability (Keefe, 1988), knowledge of learning styles can be an advantageous attack on failures, apathy, and mediocrity. Among others, Hanson (1988) and Gardner (1983) have proposed that it is no longer feasible to utilize any single intelligence. In the interdisciplinary unit, the teachers demonstrated that they are cognizant of and are teaching to at least seven kinds of intelligences. It appears that the

proposal of Sternberg (1988) that styles of thinking are as important as levels of ability is supported, and that plans now include spatial, musical, bodily-kinesthetic, and interpersonal intelligences in addition to linguistic, logical, and intrapersonal aspects. The writer will continue to encourage the broadened scope of teaching to varied kinds of intelligences.

One of the most rewarding outcomes of the learning styles approach has been an implicit and explicit acknowledgment that style does exist. A more positive learning environment, enabling students, teachers, and parents to work more cooperatively in a partnership status, has resulted. As teachers have discussed their profiles, they have found useful information to understand their preferences as well as to respect differences in others, especially with their students. The connection between curriculum and learning, with a growing awareness of the need to integrate and interact beyond traditional disciplinary lines, appears to be more firmly established.

The project has emphasized to the writer that there are no clear-cut conclusions or easy answers as to how we learn best. The search must continue to

discover the relationship among learning styles, intelligences, and teaching strategies. Simple strategies can be used to respond to students' multiple learning styles and intelligences--the main difficulty appears to be knowing how to use them. Improvements noted at the site may be a reflection of "the Hawthorne Effect," but nevertheless something good has happened.

Recommendations

As for recommendations, it is vital for educators to be cognizant of their individual styles, as well as to appreciate the styles of others--both colleagues and clients. Individual and group student analyses need to be kept current to deal adequately with the essentials of learning/teaching styles, methods, and multiple intelligences. Teacher training and certification in the middle school are in a state of flux. Increased knowledge and utilization of learning styles and multiple intelligences offer professionals valuable classroom options. The writer recommends style and intelligences training at the undergraduate teacher education level. In addition, inservicing of all current middle school personnel should be given priority.

Dissemination

As for disseminating the information secured from the project, the writer has submitted to the County Teacher Education Center the data to be available for inservice training in the areas of learning/teaching styles and multiple intelligences. Further, copies of the report have been sent to Rita Dunn, St. John's University; Helene Hodges, ASCD; Gordon Lawrence, University of Florida; Robert Hanson of Hanson, Silver, Strong Associates; Joseph Bondi, University of South Florida; Nila Connors, Valdosta State College; Howard Gardner, and Chester Pierce, Harvard University.

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APPENDICES

APPENDIX A

DAILY LESSON PLANS

DAILY LESSON PLANS

TEACHER _____ Week of _____ to _____

SUBJECT _____ Grade _____ Level _____

MONDAY: OBJECTIVE: The student will be able to:

_____ _____
(date)

_____

MATERIALS (text, pp., etc.):

_____

ACTIVITIES (PROCEDURES):

_____

_____

ASSESSMENT: Observation ___ Quiz ___ Test ___ Discussion ___ Written ___ Other____

_____

HOMEWORK: _____

Special Focus (optional) _____

TUESDAY: OBJECTIVE: The student will be able to:

_____ _____
(date)

_____

MATERIALS (text, pp., etc.):

_____

ACTIVITIES (PROCEDURES):

_____

_____

ASSESSMENT: Observation ___ Quiz ___ Test ___ Discussion ___ Written ___ Other____

_____

HOMEWORK: _____

Special Focus (optional) _____

(OVER)

WEDNESDAY: OBJECTIVE: The student will be able to:

_____ _____
(date)

_____

MATERIALS (text, pp., etc.):

_____

ACTIVITIES (PROCEDURES):

_____

_____

ASSESSMENT: Observation ___ Quiz ___ Test ___ Discussion ___ Written ___ Other____

_____

HOMEWORK: _____
Special Focus (optional) _____

THURSDAY: OBJECTIVE: The student will be able to:

_____ _____
(date)

_____

MATERIALS (text, pp., etc.):

_____

ACTIVITIES (PROCEDURES):

_____

_____

ASSESSMENT: Observation ___ Quiz ___ Test ___ Discussion ___ Written ___ Other____

_____

HOMEWORK: _____
Special Focus (optional) _____

FRIDAY: OBJECTIVE: The student will be able to:

_____ _____
(date)

_____

MATERIALS (text, pp., etc.):

_____

ACTIVITIES (PROCEDURES):

_____

_____

ASSESSMENT: Observation ___ Quiz ___ Test ___ Discussion ___ Written ___ Other____

_____

HOMEWORK: _____
Special Focus (optional) _____

APPENDIX B

LEARNING/TEACHING STYLES CHECKLIST

(FROM DAILY LESSON PLANS)

LEARNING/TEACHING STYLES CHECKLIST

(FROM DAILY LESSON PLANS)

Week of Lesson _____

Teacher _____

METHODS:	MATERIALS USED IN METHOD	CHECK EACH TIME RECORDED ON WEEK'S PLAN	TOTAL
VISUAL	_____	_____	_____
AUDITORY	_____	_____	_____
TACTUAL	_____	_____	_____
KINESTHETIC	_____	_____	_____

APPENDIX C

TEACHER TALK TIME/STRATEGIES TALLY SHEET

(FROM DAILY LESSON PLANS)

TEACHER TALK TIME/STRATEGIES TALLY SHEET

(FROM DAILY LESSON PLANS)

Week of _____ Teacher_____

Subject _____

STRATEGIES: Check each time strategy is written into week's plans.	TOTAL
Lecture _____	_____
Art/Music_____	_____
Role Playing _____	_____
Written Materials _____	_____

OBJECTIVES: Check what each objective emphasizes.	TOTAL
Knowledge Skills _____	_____
Socialization Skills_____	_____
Critical Skills _____	_____
Creative Expression_____	_____

PATTERNS: Check social configuration recorded on lesson plans.	TOTAL
Whole Group _____	_____
Individual _____	_____
Small Group _____	_____

APPENDIX D

EVALUATION CHECKLIST: INTERDISCIPLINARY UNIT

(FROM DAILY LESSON PLANS)

EVALUATION CHECKLIST: INTERDISCIPLINARY UNIT

(FROM DAILY LESSON PLANS)

Name of Unit _____

Teacher _____

Materials Used _____

Intelligences utilized:	Total times intelligence recorded on unit lesson plans:
Linguistic	_____
Logical	_____
Intrapersonal	_____
Spatial	_____
Musical	_____
Bodily-Kinesthetic	_____
Interpersonal	_____

APPENDIX E

POST OBSERVATION: ELEMENTS OF LEARNING/TEACHING STYLES

POST OBSERVATION: ELEMENTS OF LEARNING/TEACHING STYLES

Check each time element is observed during class

STRATEGIES:

Lecture	Art	Role Playing	Use of Written Materials
_____	___	_____	_____

OBJECTIVES EMPHASIZED:

Knowledge Skills	Socialization Skills	Critical Thinking	Creative Expression
_____	_____	_____	_____

OFF TASK PROCEDURES:

Behavior Problems	Length of Time Spent Each Period
_____	_____

PATTERNS:

Whole Group	Individual	Small Group
_____	_____	_____

ROOM DESIGN/ACCOMMODATIONS:

Desk Arrangement:

In Rows	In Stations of Six Tables	Other Configurations
_____	_____	_____

Nutritional Intake (Snacks)

_____

APPENDIX F

POST WORKSHOPS/CLASSROOM EXPERIENCE POLL

POST WORKSHOPS/CLASSROOM EXPERIENCE POLL

Rank the following questions.

	VERY WELL	SOMEWHAT	NOT AT ALL
Do you now understand Learning/ Teaching Styles and Multiple Intelligences?	_____	_____	_____
Have the inservice workshops provided exposure and practice in using Learning/Teaching Styles?	_____	_____	_____
Have the workshops familiarized you with the background, the instruments, terminology, techniques, and procedures for Learning Styles/ Multiple Intelligences?	_____	_____	_____

Provide an answer for the following questions.

What instructional methods do you use now? Auditory, visual, tactual, kinesthetic? _____

_____

What patterns of student learning do you utilize now? Whole group, small group, individual? _____

_____

What assessment techniques do you use now? Written tests, role playing/ group discussions, analytical essays, creative writing, projects? _____

_____

What intelligences do you teach to your classes? Linguistic, logical, intrapersonal, spatial, musical, bodily-kinesthetic, interpersonal? _____

_____